Introduction
Section V - Conservation Effects

The primary purpose of this section is to assess the effects of conservation practices in order to assist Pennsylvania land users in making informed decisions. With a display of conservation effects, field office personnel are able to formulate suitable Conservation Management Systems (CMS) to protect the resource base and to address both the land user's and society's social, cultural resources and economic objectives.

A secondary purpose of this section IS to serve as a source of appropriate procedures and methods for collecting, analyzing and displaying conservation effects data.

Collecting conservation effects data is a long-term effort to be undertaken by each field office as part of the follow-up effort in the planning process. Section V has some examples of how these effects can be displayed.

Section V is divided into three parts.

Section V-A – "Effects for CMS Formulation"
Section V-B – "Effects for Decision-Making"
Section V-C – "Procedural References"

Section V-A

Provides information on the effects of conservation practices on the five resources and considerations in the formulation of CMS. The important effects for each of the Resource Management Systems (RMS) developed in Section III are also displayed here in narrative form. The sample cross-referenced with cropping systems, soil mapping units and other descriptions of the resource setting and conditions that the RMS were formulated to address in Section III. Part A also provides a place to store "support information" for any Guidance Documents prepared for the CMS in Section III.

Section V-A generally houses effects information used in evaluating CMS and is dependent on the conservation planning disciplines (soils, agronomy, biology, forestry, engineering, etc.) for input.

V-A-1 - GENERAL EFFECTS DATA - SOIL, WATER, AIR, PLANTS and ANIMALS

This will house the Conservation Practice Physical Effects (CPPE) worksheet for each of the five resources listed above and should be inserted behind the corresponding title.

V-A-2 - EFFECTS FOR GUIDANCE DOCUMENTS

Here may be housed refinements of the CPPE including site specific data with quantified or narratively described effects.

Section V-B

Provides a storage area for case studies or producer experiences. The case studies display the effects on all of the decision-maker's concerns, not merely those that are related to resolving resource problems. They are developed from observation and documentation of experiences of the planner as well as those of the decision-maker.

Section V-B stores data gleaned from real-world experiences as opposed to modelled results.

V-B-1 - PRODUCER EXPERIENCES

This will house case studies of resource situations where conservation is successfully applied It is the comparison of situations before and after conservation that develop the body of knowledge in the community. Potential clients may base their decisions and actions on the successes and failures of their neighbors. Field office personnel

will be able to accumulate case studies that represent most of the resource situations found in their service area.

Over time, the effects of the conservation treatment options will be documented as to their outcome. The differences between those effects and the effects of the benchmark system (present system) will be noted as the impacts of the conservation treatment option. Completed case studies can be used to illustrate what the conservation treatment option can do for the resources on a particular soil type and resource use situation. Other land users with similar enterprises on similar soils may adopt resource management systems based on the documented impacts of the system.

V-B-2 – OTHER EFFECT INFORMATION

Initially, there may be few or no case studies. Other sources of experiential data include watershed documents, experiment station research reports, field trials, demonstration farms and government or university work. These may provide effects information while case studies are being accumulated, and will always be useful references.

Section V-C

Provides a storage area for software programs, models, spreadsheets or other techniques that allow the planner to complete complex procedures. Tips on using come of these procedures, or explanations of whom to go to for help, are stored in this section.

V-C – PROCEDUREAL REFERENCES

This is the “how to do it” section. It will house instructions and technical notes such as those for developing case studies, identifying and documenting Acceptable Management Systems (AMS), and for following the Conservation Effects for Decision-Making (CED) procedures.

Guidance For the Development and Use of Case Studies

A case study is an organized set of quantitative and qualitative data, information, and narrative observations collected over time to describe resource conditions before and after treatment. It is a record of what happened under stated conditions. Case studies developed by local offices will be a quick and practical means of providing land users a vision of the way a current situation might be modified to achieve a desired resource condition. Therefore, case studies are simply another planning tool used to improve our assistance to clients. There is no required format that local offices must follow to display case studies in their county. The examples provided will serve as a sample format that may be used.

How to Select Land Users for Case Studies

The case studies developed should represent a typical cross-section of soils and land use in the county. Not every conservation plan has the potential to be a good case study. Not that many case studies are needed to represent the entire county. As plans are developed, identify land users who seem cooperative, who will implement the entire plan, and who will share information about their operations. Ask potential case study subjects if they would be willing to share detailed information about their operation and explain the value of the case study to others who would benefit from knowing how much fertilizer or pesticide was used, how much more effectively less fuel and tractor time is required, how crop yields or wildlife populations are increased with their plan implemented. Land users selected for case studies will require more frequent and detailed follow-up than other conservation plan cooperators. The case studies developed will be valuable in selling conservation to others.

How to Develop Case Studies

A case study must identify and describe resource situations, both the before and after treatment, and the actions taken to achieve the outcomes. Case studies should be developed over time, through

follow-up, for the major resource concerns on soil mapping units and in resource use situations that are representative for the county. The first step in developing case studies is to identify the principal problems and opportunities on a tract of land. The second step is to identify the components of the land user's existing system, known as the benchmark system, and the effects that system has on the resources. The third step is to list the conservation treatment options agreed to by the land user to solve conservation problems.

Data Needed for Case Studies –

- Resource setting;
- Before treatment resource situation (Benchmark);
- Resource concerns with the benchmark system;
- Specific components (actions of the benchmark system;
- Identification of the resources affected: soil, water, air , plants and animals;
- Effects of the benchmark system on the resources;
- Proposed conservation treatment option;
- Specific components (action) of the conservation treatment option;
- Effects of the conservation treatment option documented through follow-up;
- Impacts of the conservation treatment option, the difference between the effects of the benchmark system and the conservation treatment option.

Understanding the Conservation Effects Process

Introducing CPPE

Planning the soil, water, air, plant and animal resources and their interrelationships has increased the complexity of assisting decision-makers. NRCS can no longer provide alternatives and assistance that address individual problems without considering the effects on all five resources. Our involvement with water quality has brought this reality to the surface, as the public's concern for the environment has grown.

As a technical agency, NRCS must constantly strive to improve methods to evaluate the potential effects of conservation practices on the resources when providing technical assistance. It is necessary to determine the physical effects relevant to each resource during the planning process. Because a conservation practice has a positive effect on one resource concern does not necessarily mean it will also have a positive effect on other resources.

Effects Concept

The conservationist needs to recognize the effect of applying conservation practices in order to select combinations of practices that solve the identified or potential concerns without creating new problems. The effects concept is applicable for formulation of CMS alternatives for specific fields, Conservation Treatment Units (CTUs), or other planning areas. It can also be used to assist in explaining resource problems, and display treatment options. **(The entire effects process will and not be needed when working with each decision-maker. Only unique or complex situations would warrant documentation of the complete effects concept).**

What is CPPE?

The Conservation Practice Physical Effects (CPPE) detail in subjective language the physical effects that conservation practices have on problems for the five resources. This document is to be filed in Section V-A-1 of the PATG and becomes the foundation for developing site specific worksheets in Section III. The estimation of physical effects is based on professional experience and available technical information. Each resource may have multiple problems that are represented by one of the various columns in the CPPE worksheet. The effects of practices may be greater if they are associated with a land use change.

The key question that should be asked when reviewing the CPPE is, "If this practice is applied, what effect will it have not only on the identified or potential target resource concerns/ considerations but also on all the other resource concerns/considerations contained in the column

headings?" The headings in each column of the CPPE briefly describe identified or potential resource concerns/considerations.

What is the Purpose of CPPE?

The primary purpose of CPPE is to document the physical effects of conservation practices on resource problems.

Also, the purpose of CPPE is to emphasize to NRCS personnel:

A. The realization that resources are interrelated and treatment of one resource also affects other resources;

B. The importance of formulating CMS by providing a process that:

    1. Considers the effects of practices on individual concerns of each of the five resources;

    2. Facilitates combining of practices into potential CMS alternatives, and

    3. Helps evaluate the potential options against quality criteria for achieving a RMS or for the quality criteria developed for an AMS in the event an AMS is needed.